IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of: William K. S. Cleveland et al.

Serial No.: 10/511,248 Examiner: Vishal V. Vasisth

Filed: October 13, 2004 Art Unit: 1797

Title: Method and Lubricant and Fuel Compositions for Two-Stroke Engine Containing Power Valves

Hon. Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sirs:

DECLARATION UNDER 37 C.F.R. §1.132

I, Laimute R. Svarcas, declare as follows:

I received a BS in chemistry degree from Case Western Reserve University.

I have been employed by The Lubrizol Corporation since 1987. Since that time I have been responsible for many aspects of technical development of engine oil lubricants, primarily focused on formulating new additive products for the small engine market segment. These include formulating lubricants for two stroke and four stroke outboard engines, personal watercraft, snowmobile and motorcycle engines. My current responsibilities include being a technical contact for two stroke engine lubricant platform development work and a technology manager in Corporate Operations.

I am familiar with the invention claimed in the above-mentioned case.

CERTIFICATE OF EFS SUBMISSION (37 C.F.R. § 1.8(a)(i)(1)(C))

I hereby certify that this correspondence is being filed electronically via the USPTO EFS to the Commissioner for Patents, United States Patent & Trademark Office, in accordance with §1.6(a)(4) on:

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This declaration includes all of the data provided in the previous declaration dated December 16, 2009. Additional detail is provided below indicating the actives treat rates of the various components, that is, the percent treat rate of the components when no solvent or diluent oil is included in the calculations. When considered on an actives basis it is clear that the treat rates of the various (B)(2) components tested are comparable to one another. This explains why the treat rates involved were selected.

In order to illustrate the improvement in performance provided by the compositions of the above reference application, the following experiments are presented. These examples were prepared with formulations similar to examples in the present application and were tested to determine a power valve rating as well as other ratings using the same test procedure carried out in the present application (see footnotes a and k under the Table that starts on page 20 of the specification). The formulations of the examples and the test results are summarized in the tables below:

Table 1a – Formulations of New Examples A to J

Component[1]	Ex A Comp	Ex B Comp	Ex C Comp	Ex D Comp	Ex E Comp	Ex F Comp	Ex G INV	Ex H INV	Ex I Comp	Ex J Comp
Stoddard Solvent	15	15	15	15	15	15	15	15	15	15
Methacrylate Copoly PPD					0.15	0.15	0.15	0.15	0.15	0.15
(B)(1) ISTA-TEPA *[Actives Treat Rate]*	**1.2** *[1.2]*	**1.2** *[1.2]*	**3.0** *[3.0]*	**1.2** *[1.2]*			**2.0** *[2.0]*	**2.0** *[2.0]*	**1.0** *[1.0]*	**4.0** *[4.0]*
(B)(2)(a) Aminophenol *[Actives Treat Rate]*	**11.1** *[6.7]*	**11.1** *[6.7]*	**11.1** *[6.7]*	**11.1** *[6.7]*						
(B)(2)(b) Mannich *[Actives Treat Rate]*					**9.9** *[7.4]*	**9.9** *[7.4]*	**9.9** *[7.4]*	**8.6** *[6.5]*	**8.6** *[6.5]*	**8.6** *[6.5]*
(B)(3) Friction Modifier *[Actives Treat Rate]*	**0.3** *[0.3]*	**0.3** *[0.3]*	**0.3** *[0.3]*	**0.3** *[0.3]*		**0.5** *[0.5]*	**0.5** *[0.5]*	**0.5** *[0.5]*	**0.5** *[0.5]*	**0.5** *[0.5]*
PIBSA Dispersant				3.16						
Diarylamine Antioxidant	1.0	1.0	1.0	1.0						
Coupled Ca salt Detergent	1.0	3.0	3.0							
Rust Inhibitor										

1 – Each example contains 66 to 75 percent by weight of the same mineral oil blend which was a mixture of 600 Neutral and 150 Bright Stock base oils. The specific amount of mineral oil present varies from example to example based on the amount of additives present in the specific example. The values in the table above for the various components are percent by weight. The actives treat rate values shown in Table 1a above are the percent by weight each component is present in the overall composition when all the solvent and/or diluent oil that is usually present in the components is discounted.

Table 1b – Results of New Examples A to J

Test Results	Ex A Comp	Ex B Comp	Ex C Comp	Ex D Comp	Ex E Comp	Ex F Comp	Ex G INV	Ex H INV	Ex I Comp	Ex J Comp
(B)(1) *(1.6-3.5 wt%)*	1.2	1.2	3.0	1.2			2.0	2.0	1.0	4.0
(B)(2)[4]	6.7	6.7	6.7	6.7	7.4	7.4	7.4	6.5	6.5	6.5
(B)(1)+(B)(2)[4] *(5.5-15 wt%)*	7.9	7.9	9.7	7.9	7.4	7.4	9.4	8.5	7.5	10.5
Completed Test Hours	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Piston Varnish Rating[2]	9.0	9.1	9.4	8.75	7.3	6.9	8.9	9.2	9.0	9.2
Undercrown Rating[2]	6.4	6.0	6.3	1.9	4.2	1.6	5.2	6.3	4.2	5.1
Piston Scuffing Rating[2]	9	9	9	9	5	8	8	9	9	9
Piston Crown Rating[2]	8.7	8.4	8.6	8.9	8.7	9.2	8.8	8.9	8.8	8.8
Ring Stick Rating[2]	10	10	10	9.0	7.2	8.1	5.0	9.0	8.9	9.0
Power Valve Rating[3]	3.1	3.0	3.8	2.6	2.9	4.9	4.6	4.5	4.9	5.0

2 – The piston varnish, undercrown, piston scuffing, piston crown and ring stick ratings indicate the cleanliness and/or amount of damage to the described area and/or part at the end of the test. Higher ratings indicate better results.

3 – A power valve rating of 3 or higher is internally considered an "acceptable" result, however higher results indicate better performance and a rating of 3.5 or higher is internally considered to be a "superior" result.

4 – The values in the table for (B)(2) and (B)(1)+(B)(2) have been adjusted to reflect the actives basis numbers included in Table 1a above.

The results continue to show that the inventive examples provide unexpectedly better results relative to the comparative examples.

As Examples A, B, C and D are now all comparative examples, as the current claims are limited to compositions that contain Mannich reaction products, the results for these examples will not be discussed in detail.

Looking at Examples E, F and G, which use the Mannich as component (B)(2), the results show that Inventive Example G provides a superior power valve rating as well as the best piston varnish rating, undercrown rating, and at least comparable rating in all other categories relative to the other Mannich examples. Comparative Example E shows that a high treat rate of the Mannich additive by itself does not provide the improved performance. Comparative Example F shows that the Mannich additive by itself, even in combination with component (B)(3) does not provide the overall improved performance. While Comparative Example F has the best power valve rating in the set, its other ratings are not as good as Inventive Example G's.

Looking at Examples H, I and J, the results show that Inventive Example H provides a superior power valve rating while also providing the best undercrown rating along with the best or at least comparable ratings relative to the comparative examples. Comparative Example I demonstrates that the Mannich additive in combination with component (B)(3) but with less than the required amount of component (B)(1) does not

provide the overall improved performance seen in the inventive example. While Comparative Example I does have the higher power valve rating in the set, it falls short most notably in the undercrown rating. Comparative Example J, while technically outside the current claims due to its high amount of component (B)(1) demonstrates that the surprising results of the present invention extend at least to the scope of the present claims.

Examples 3, 4, 6, 7 and 8 in the specification also contain component (B)(3) as noted in the footnotes under the table that starts on page 20 of the specification. Examples 4 and 6 are inventive examples while examples 1, 3, 5, 7 and 9 are comparative and further demonstrate that the combination of components specified by the present invention provide unexpectedly improved results.

I further declare that all statements herein made of my own knowledge are true and all statements herein made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

Laimute R. Svarcas

September 28, 2010

(Date)